

(CTG), a method of making the cellular immunogen and a method of using the immunogen. Reconsideration and withdrawal of the restriction requirement is requested based on the following remarks.

In this election, it is understood that the restriction involves only cognate transgenes. Thus, other transgenes, e.g., those which encode regulatory sequences or immunomodulators such as cytokines, are not excluded from examination. It is further understood that the present restriction does not exclude from examination the embodiment of a cellular immunogen comprising exactly one vector comprising a cognate transgene per each cell of the cellular immunogen. Thus, the election of Group I is understood to encompass a cellular immunogen wherein multiple copies of one cognate transgene are contained within the cell.

Likewise, it is understood that the Group II encompasses both a cellular immunogen which comprises at least two cell types, wherein each cell type is transfected with a different cognate transgene, and a cellular immunogen wherein at least two different cognate transgenes are contained within one cell.

Traversal

The rule for unity of invention 37 CFR § 1.475, states:

"An international and a national stage application shall relate to one invention only, or to a group of inventions so linked as to form a single general inventive concept."

The rule further dictates that unity of invention is:

"...fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression 'special technical features' shall mean those technical features that define a contribution which each claimed invention, considered as a whole, makes over the prior art."

Here, Groups I and II form a single inventive concept and possess a technical relationship involving one or more of the same or corresponding special technical features. Thus, the restriction requirement is improper and should be withdrawn.

Unifying Special Technical Features

The examiner asserts that there are two separate "products" embodied in the present claims:

(i) a cellular immunogen comprising cells transfected with a single transgene construct that is cognate to the target proto-oncogene to which an immune response is sought, expressing a single polypeptide sequence that induces host immunoreactivity to host self-determinants of the product of the target proto-oncogene; and

(ii) a cellular immunogen comprising cells transfected with a plurality of transgene constructs, or a single construct comprising multiple transgenes, that express different polypeptide sequences;

wherein at least one transgene is cognate to the target proto-oncogene to which an immune response is sought, and expresses a polypeptide sequence that induces host immunoreactivity to host self-determinants of the product of the target proto-oncogene.

The two products as defined by the Examiner are not separate inventions, but are rather two embodiments of the same invention. These embodiments have a substantial technical relationship due to the sharing of a unifying special technical feature. This unifying special technical feature is the presence of a transgene construct comprising a transgene that encodes for at least one polypeptide with homology to a polypeptide encoded by a target proto-oncogene to which an immune response is sought.

The only difference between embodiments (i) and (ii) above, is that the first generates immunity by transfecting a construct comprising a single transgene, and the second seeks the same object by transfecting with a plurality of transgenes.

The "single cognate transgene" embodiment encodes for a polypeptide that is homologous to the polypeptide encoded by the target proto-oncogene to which an immune

response is sought. As a result, the expressed polypeptide will generate an immune response that is immunogenically cross-reactive with the polypeptide expressed by the targeted proto-oncogene.

The "plurality of transgenes" embodiment encodes a group polypeptides that are likewise homologous to the polypeptide encoded by the target proto-oncogene.

However, for both embodiments (i) and (ii):

- The methods, processes, reagents and techniques involved in transfecting transgenes into host cells is the same (page 39, line 16 to pg. 41, line 15 of the specification).
- The phenomenon exploited is proto-oncogene-specific antigenicity.
- Immunity to the target proto-oncogene is effected by expression of the cognate transgene.

The methods and mechanisms by which both embodiments act depend only on delivery and expression of a cognate transgene to the cell. The construction and mode of action for either embodiment does not change simply because the immunogen contains single or multiple transgenes. Thus, there exists the requisite substantial technical relationship between the two embodiments of the invention to support unity of invention.

The examiner alleges that the cellular immunogen in (i) above is simple, while the cellular immunogen in (ii) above is (presumably) complex. Applicants respectfully disagree.

First, relative simplicity vs. complexity is not a ground for challenging unity in 37 CFR § 1.475, unless it negates a technical relationship involving one or more special technical features. The examiner has not demonstrated how the presence of multiple transgenes in the claimed cellular immunogens negates this technical relationship.

Second, cells from embodiment (i) or (ii) in fact differ little in complexity. They are both cellular immunogens which have been transfected with genetic material which, when expressed, will cause production of one or more polypeptides which are homologous to the polypeptide encoded by the target proto-oncogene. Embodiment (ii) comprises a cell transfected with multiple transgenes and embodiment (i) comprises a cell transfected with a single transgene. The transgenes, whether single or multiple, all encode for polypeptides which share some homology with the target proto-oncogene, and thus are possessed of a common technical relationship.

The examiner also alleges that embodiments (i) and (ii) differ in structure, presumably because one contains more coding sequences than the other. In fact, the transgene of embodiment (i) and each transgene of embodiment (ii), are nucleic acid sequences that encode for polypeptides that share some homology with the polypeptide encoded by the targeted proto-oncogene. The multiple transgenes of embodiment (ii) vary in sequence by only a few codons, but structurally, they are all nucleic acid sequences encoding for a portion of the polypeptide encoded by the target proto-oncogene to which an immune response is sought. However, the presence of additional coding sequences is a trivial variation in the cognate transgene vector structure, which affects neither the construction nor the function of the claimed immunogen. Thus, the alleged structural differences do not destroy unity of invention between embodiments (i) and (ii).

The examiner further states that embodiments (i) and (ii) require different methods of making, and require different steps and different reagents. Examiner has not identified what steps or reagents may differ in making the cellular immunogens of embodiment (i), vs. making those of embodiment (ii). Applicants assert that the same known methodologies, as referenced in the Examples, are used for generating all of the claimed cognate transgene vectors. Likewise, the methods of transfection of cells with transgenes do not vary simply because a plurality of transgenes are transfected as opposed to a single transgene.

The examiner further states that the distinction is made between claims to different products whose modes of operation would be independent of one another. As discussed

above, the claimed cellular immunogens, whether transfected by one transgene or a plurality of transgenes, operate by expressing a polypeptide product which generates an immune reaction in the host that is cross-reactive with a polypeptide expressed by the target proto-oncogene. The mode of operation is the same in both embodiments.

The examiner attempts to support the restriction requirement by alleging also that a second search would be required to find other transgenes. The standard for unity of invention under 37 CFR 1.475 does not link the restriction requirement to the necessity of more than one search. Rather, the rule clearly states that the requirement is fulfilled

“...when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features...”

As shown above, embodiments (i) and (ii) share a technical relationship based on the presence of a cognate transgene construct.

Conclusion

The distinction that the examiner has raised between embodiments (i) and (ii) is artificial and has no reasonable basis. Contrary to the examiner's position, embodiments (i) and (ii) indeed relate to a single inventive concept. That inventive concept comprises a cellular immunogen which operates by expressing a polypeptide that generates an immune response that is cross-immunogenic with a polypeptide expressed by a target proto-oncogene. The cellular immunogen is made to express that polypeptide by transfecting into the cell a transgene (or a plurality thereof) which is cognate to the targeted proto-oncogene for which an immune response is desired. The method of making and the mechanism of action of the cellular immunogen remains unchanged whether one cognate transgene or a plurality of transgenes is inserted.

In light of the foregoing comments, Applicants respectfully request that the examiner withdraw the present restriction requirement.

IDS Submitted July 5, 2001

Although Examiner signed the last page of the IDS, she did not initial the documents listed on the last page. Applicant requests that the Examiner initial these, and includes two copies of the last page of the 1449 form for the Examiner's convenience.

Respectfully submitted,

MICHAEL S. HALPERN, et al.

BY 

DANIEL A. MONACO
Registration No. 30,480
DRINKER, BIDDLE & REATH, LLP.
One Logan Square
18th and Cherry Streets
Philadelphia, PA 19103-6996
(215) 988-3312
(215) 988-2757 (fax)
Attorney for Applicants